Shane Storks

Ph.D. Candidate at University of Michigan

sstorks@umich.edu www.shanestorks.com

Experienced educator and mentor with a substantial history of service and outreach. Research expertise in **artificial intelligence (AI),** including human-inspired natural language understanding, interactive instruction following agents, and **AI in educational settings**.

Education

University of Michigan

Doctor of Philosophy — Aug. 2019 – Present
Computer Science and Engineering

Advised by Joyce Chai in the Situated Language & Embodied Dialogue (SLED) lab. Candidacy achieved June 2021. Tentative dissertation title: *Deconstructing Coherent Physical Commonsense Reasoning in Foundational Language Models.*

Master of Science — Aug. 2019 – Apr. 2021
Computer Science and Engineering

Lawrence Technological University

Bachelor of Science — Aug. 2014 – May 2018
Mathematics and Computer Science (major), Physics (minor), Honors Program

Teaching Experience

Teaching Positions

Graduate Student Instructor — Fall 2020, Fall 2021, Fall 2022
EECS 595/SI 561/LING 541: Natural Language Processing at University of Michigan

Supported 100+ students through office hours and online interaction. Delivered lectures (listed below), designed assignments, projects, and grading criteria, and supervised a grading team. Assisted in fully remote, hybrid, and fully in-person settings.

Guest Lectures

Commonsense Reasoning in Natural Language Understanding — Nov. 2023
EECS 595: Advanced Artificial Intelligence at University of Michigan

Language Model Prompting — Nov. 2022
EECS 595: Natural Language Processing at University of Michigan

Toward Coherent Commonsense Language Understanding in Machines — Jan. 2022
EECS 692: Advanced Artificial Intelligence at University of Michigan

Language Model Prompting — Dec. 2021
EECS 595: Natural Language Processing at University of Michigan

Honors and Awards

Finalist, Richard and Eleanor Towner Prize for Outstanding GSIs — 2023
College of Engineering, University of Michigan

Fall 2022 Graduate Student Instructor Award — 2023
Computer Science and Engineering Division, University of Michigan

Winner, Alexa Prize SimBot Challenge — 2023
Amazon

Dean's Award for Academic Excellence — 2018
Lawrence Technological University College of Arts and Sciences

Wayne H. and Vita S. Buell Honor Full Scholarship — 2014 – 2018
Lawrence Technological University

Publications

Peer Reviewed Conference Papers

From Heuristic to Analytic: Cognitively Motivated Strategies for Coherent Physical Commonsense Reasoning
2023 Conference on Empirical Methods in Natural Language Processing (EMNLP 2023)
Zheyuan Zhang,* **Shane Storks**,* Fengyuan Hu, Sungryull Sohn, Moontae Lee, Honglak Lee, & Joyce Chai

Can Foundation Models Watch, Talk and Guide You Step by Step to Make a Cake?
Findings of the Association for Computational Linguistics: EMNLP 2023
Y. Bao, K.P. Yu, Y. Zhang, **S. Storks**, I. Bar-Yossef, A. De La Iglesia, M. Su, X.L. Zheng, & J. Chai

NLP Reproducibility for All: Understanding Experiences of Beginners
61st Annual Meeting of the Association for Computational Linguistics (ACL 2023)
Shane Storks, Keunwoo Peter Yu, Ziqiao Ma, & Joyce Chai

In-Context Analogical Reasoning with Pre-Trained Language Models
61st Annual Meeting of the Association for Computational Linguistics (ACL 2023)
Xiaoyang Hu,* **Shane Storks**,* Richard L. Lewis, & Joyce Chai

DANLI: Deliberative Agent for Following Natural Language Instructions
2022 Conference on Empirical Methods in Natural Language Processing (EMNLP 2022)
Y. Zhang, J. Yang, J. Pan, **S. Storks**, N. Devraj, Z. Ma, K.P. Yu, Y. Bao, & J. Chai

Tiered Reasoning for Intuitive Physics: Toward Verifiable Commonsense Language Understanding
Findings of the Association for Computational Linguistics: EMNLP 2021
Shane Storks, Qiaozi Gao, Yichi Zhang, & Joyce Chai

Beyond the Tip of the Iceberg: Evaluating Coherence of Text Classifiers
Findings of the Association for Computational Linguistics: EMNLP 2021
Shane Storks & Joyce Chai

Peer Reviewed Workshop Papers

Best of Both Worlds: A Hybrid Approach for Multi-Hop Explanation with Declarative Facts
1st International Workshop on Combining Learning and Reasoning (CLeaR) at AAAI 2022 (Online)
Shane Storks, Qiaozi Gao, Aishwarya Reganti, & Govind Thattai

Are We There Yet? Learning to Localize in Embodied Instruction Following
Hybrid Artificial Intelligence (HAI) Workshop at AAAI 2021 (Online)
Shane Storks, Qiaozi Gao, Govind Thattai, & Gokhan Tur

Other Manuscripts

SEAGULL: An Embodied Agent for Instruction Following Through Situated Dialog
Alexa Prize SimBot Challenge Proceedings 2023
Y. Zhang, J. Yang, K. Yu, Y. Dai, **S. Storks**, Y. Bao, J. Pan, N. Devraj, Z. Ma, & J. Chai

Recent Advances in Natural Language Inference: A Survey of Benchmarks, Resources, and Approaches
arXiv: 1904.01172 (featured in ACL 2020 Commonsense Reasoning for NLP Tutorial and Stanford University Human-Centered Artificial Intelligence and AI Index Workshop on Measurement in AI Policy)
Shane Storks, Qiaozi Gao, & Joyce Y. Chai

** Denotes equal contribution.*

Other Presentations

Invited Presentations

Making Generative AI Better for You: Fine-Tuning & Experimentation for Custom Research Solutions Nov. 2023
Invited Tutorial, Michigan Institute for Data Science (MIDAS) Generative AI Tutorial Series (Ann Arbor, MI, USA)

Cognitively Motivated Strategies for Coherent Physical Commonsense Reasoning Nov. 2023
Invited Talk, 2023 Office Day at LG AI Research Global AI Center (Ann Arbor, MI, USA)

Cognitive Motivations in Analogical and Physical Reasoning with Large Language Models Oct. 2023
Invited Talk, University of Michigan Weinberg Institute for Cognitive Science Seminar Series (Ann Arbor, MI, USA)

Prompt Engineering with Large Language Models: Basics and Research Applications July 2023
Invited Talk, MIDAS Generative AI for Research Faculty Workshop (Ann Arbor, MI, USA)

Large Pre-Trained Language Models for Physical Action Understanding and Planning Oct. 2022
Invited Talk, 2022 Microsoft Turing Academic Program (MS-TAP) Workshop (Online)

Simulating Hot Topic Popularity with a Modified SIR Model Feb. 2018
Invited Talk, Lawrence Technological University Campus Open House Academic Session (Southfield, MI, USA)

Contributed Presentations

NLP Reproducibility for All: Understanding Experiences of Beginners Oct. 2023
Poster Session, Michigan AI Symposium (Ann Arbor, MI, USA)

Harnessing Language and Vision Foundation Models for Action-Effect Prediction Apr. 2023
Poster Session, NLP@Michigan Day (Ann Arbor, MI, USA)

Learning Physical Action Schemas from Language and Experience Sept. 2022
Poster Session, DARPA PTG Site Visit at University of Michigan (Ann Arbor, MI, USA)

Toward Verifiable Commonsense Language Understanding May 2022
Poster Session (Best Poster Award), NLP@Michigan Day (Ann Arbor, MI, USA)

Simulating Hot Topic Popularity with a Modified SIR Model Apr. 2017
Contributed Talk, Mathematical Association of America MathFest (Chicago, IL, USA)

Other Work Experience

Graduate Student Research Assistant Fall 2018 – Present
University of Michigan

Collaborative research work with PhD advisor, colleagues, and student mentees.

Applied Scientist Intern (Returning) June 2021 – Aug. 2021
Amazon Alexa AI

Applied Scientist Intern June 2020 – Aug. 2020
Amazon Alexa AI

Conducted research projects on embodied agent instruction following and multi-hop reasoning. Collaborated with mentors from Natural Understanding and Teachable AI teams at Lab126, co-authoring two papers presented at AAAI conference workshops.

University Fellow Aug. 2018 – Aug. 2019
Michigan State University

.NET Developer & Data Analyst Jan. 2017 – July 2018
Universal Logistics Holdings, Inc.

Technical Writing Assistant & Junior Programmer Sept. 2015 – Dec. 2016
Dominion Technologies Group, Inc.

Research Mentoring

Graduate Student Mentees

Zheyuan Zhang — Jan. 2023 – Present
University of Michigan

Wenfei Tang — Jan. 2022 – Feb. 2023
University of Michigan (now AI Software Engineer at NVIDIA)

Undergraduate Student Mentees

Fengyuan Hu — May 2023 – Present
University of Michigan

Xiaoyang Hu — Jan. 2022 – June 2023
University of Michigan (now Research Assistant at Brown University)

Haoyi Qiu — Jan. 2021 – Dec. 2021
University of Michigan (now Graduate Student at University of California, Los Angeles)

Brianna Epstein — Jun. 2020 – Dec. 2021
University of Michigan (now Software Engineer at ExtraHop)

Professional Service

Organizing

Co-Organizer, Queer in AI Workshop and Social Events — July 2023
61st Annual Meeting of the Association for Computational Linguistics (Toronto, ON, Canada)

Co-Organizer, NLP @ Michigan Day — Apr. 2023
University of Michigan (Ann Arbor, MI, USA)

Reviewing

Journal of Experimental Psychology: Learning, Memory, and Cognition — 2023

ACL Rolling Review (ARR) — 2023
Association for Computational Linguistics

Conference on Empirical Methods for Natural Language Processing (EMNLP) — 2019, 2022, 2023
Association for Computational Linguistics

Annual Meeting of the Association for Computational Linguistics (ACL) — 2023
Association for Computational Linguistics

International Conference on Computational Linguistics (COLING) — 2022
International Committee on Computational Linguistics

Outreach

JRN 551 (Case Studies in Public Relations) Project Advisor — Mar. 2023
Central Michigan University (Mount Pleasant, MI, USA)

Consulted with students in a public relations capstone course on AI trends and ethical issues.

Elementary Board Member — Aug. 2014 – Aug. 2018
Macomb Science Olympiad (Macomb County, MI, USA)

Helped organize engaging STEM-based tournaments and workshops for elementary students. Received Certificate of Appreciation for Inspiring Future Scientists as part of this role.

Crime Busters Event Supervisor — Aug. 2014 – May 2018
Macomb Science Olympiad (Macomb County, MI, USA)

Designed examinations for and supervised a STEM-based competitive event for elementary-level students.

Research Funding

Contributions to Funded Project Proposals and Renewal Milestones

Multimodal Language Models for Coherent Physical Commonsense Reasoning — Aug. 2022 – Present
LG AI Research

Perceptually-Enabled Task Guidance (PTG) — Feb. 2022 – Present
Defense Advanced Research Projects Agency (DARPA)

SEAGULL: Situated and Embodied Agent with GroUnded Language Learning — Jan. 2022 – June 2023
Amazon Alexa Prize SimBot Challenge

Enabling Transparency & Interpretability in Turing Natural Language Models — Apr. 2022 – Dec. 2022
Microsoft Turing Academic Program (MS-TAP)

Individual Grants & Fellowships

Weinberg Cognitive Science Travel Grant — Aug. 2023
University of Michigan Weinberg Institute for Cognitive Science

Rackham Conference Travel Grant — Dec. 2022, July 2023
University of Michigan Rackham Graduate School

University Distinguished Fellowship — Aug. 2018 – Aug. 2019
Michigan State University

MAA Student Travel Grant — July 2017
Mathematical Association of America (MAA)

Professional Memberships

Institute of Electrical and Electronics Engineers (IEEE) — 2023

Queer in AI — 2022

Association for Computational Linguistics (ACL) — 2021

Society of Physics Students (SPS) — 2018

Certifications

Amazon Web Services (AWS) Technical Essentials — 2022
AWS Training and Certification

Web Foundations Associate — 2014
Certified Internet Web Professional

Microsoft Excel 2007 Specialist — 2013
Microsoft

Technical Skills

Programming Languages:
Python, Bash, C++, Java, MATLAB, C#, VB.NET, SQL, Prolog

Operating Systems:
Windows, macOS, Ubuntu, CentOS

Libraries:
PyTorch, 🤗 Transformers, TensorFlow, spaCy, CoreNLP, NLTK, PyTest, NumPy, scikit-learn, Pandas

Other:
Git, LaTeX, AWS, Slurm, Unity, Docker, ROS